ABSTRACTS

IMPROVEMENT OF RICE-FISH CULTURE FROM TROPICAL AGROECOSYSTEMS FERTILIZATION, ANTANANARIVO, MADAGASCAR

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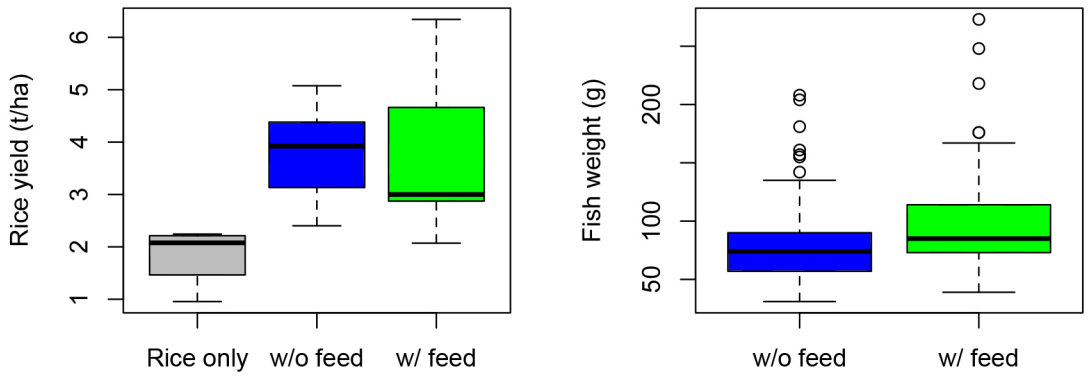
Flooded rice fields are ecosystems favorable to the growth and production of many aquatic organisms. They can even play a major role in the feeding and nutrition of local communities, as a source of self-recruiting species or by supporting the production of farmed fish in association with rice. Integrated rice-fish culture, implies the use of larger and higher side dykes and digging a channel within the field, which serves as a refuge area for fish at all stage of rice culture and when the field is drained. In Madagascar, integrated rice-fish culture has proven a yield increase, without fertilizers or feed inputs, of 19% compared to traditional rice culture. Therefore, after deducing 8.6% loss space for refuge channel, a sustainable net increase of 10.4% in rice production may permit to secure such a basic food commodity for local populations. However, in order to increase productivity and reach food self-sufficiency, fish need to be fed and rice to be fertilized. While agriculture and livestock systems in Madagascar are rather extensive with low if any inputs, agroecosystems are diversified and produce several crop and livestock residues that can be valued as alternatives to mineral fertilizers.

Aside from confirming the yield increase in rice production from integrated rice-fish culture systems, the aim of this farm experiment was therefore to characterize the effects of the qualitative and quantitative use of agroecosystem crop residues on rice and fish yield. Thirty farmers were therefore included in the study and practices investigated, as amount and quality of foods or organic fertilizers provided to integrated rice-fish systems. For instance, qualitative use of termitary had only a significant impact on fish weight (Mann-Whitney-Wilcoxon, $p = 2.7\ 10^{9}$). Further use of fertilizers will be evaluated with an expected effect on fish and/or rice.



Experimental results from rice (left) and fish (right) production with qualitative use of termitary